

Electricity and Magnetism, Hungary, OMH (Országos Mérésügyi Hivatal)

Calibration or Measurement Services			Measurand Level or Range			Measurement Conditions/Independent variables		Expanded Uncertainty							
Quantity	Instrument or artifact	Instrument Type or Method	Minimum value	Maximum value	units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?	Uncertainty matrix	Comments	NMI Service Identifier
DC voltage sources: single values	Standard cell	Direct comparison with reference standard	1.018	1.018	V	Air temperature	20 °C	5	µV/V	2	95%	Yes			1
DC voltage sources: single values	Solid state voltage standard	Direct comparison with reference standard	10	10	V			1	µV/V	2	95%	Yes			2
DC voltage sources: single values	Solid state voltage standard	Direct comparison with reference standard	1.018	1.018	V			1	µV/V	2	95%	Yes			3
DC voltage sources: low values	Multifunction calibrator, DC voltage source: voltage U	Direct comparison with multifunction transfer standard	0	200	mV			(0.5 + 0.01 U), U in mV, values range from 0.5 to 2.5	µV	2	95%	No			4
DC voltage sources: low values	Multifunction calibrator, DC voltage source	Direct comparison with multifunction transfer standard	0.2	10	V			5	µV/V	2	95%	Yes			5
DC voltage sources: intermediate values	Multifunction calibrator, DC voltage source	Direct comparison with multifunction transfer standard	10	1000	V			5	µV/V	2	95%	Yes			6
DC voltage meters: intermediate values	Multifunction transfer standard: voltage U	Comparison with reference standard	1	100	mV	U	1 mV, 10 mV, 100 mV	(0.5 + 0.002 U), U in mV, values range from 0.5 to 0.7	µV	2	95%	No			7
DC voltage meters: intermediate values	Multifunction transfer standard: voltage U	Comparison with reference standard	1	1000	V	U	1 V, 10 V, 100 V, 1000 V	2	µV/V	2	95%	Yes			8

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DC voltage meters: intermediate values	DC voltmeter, multimeter, multifunction transfer standard: voltage U	Direct comparison with calibrator	0	200	mV			(1 + 0.01 U), U in mV, values range from 1 to 3	µV	2	95%	No			9
DC voltage meters: intermediate values	DC voltmeter, multimeter, multifunction transfer standard	Direct comparison with calibrator	0.2	1000	V			10	µV/V	2	95%	Yes			10
DC resistance standards and sources: low values	Fixed resistor, resistance box	Comparison by DCC bridge	0.1	0.1	mΩ	Power	10 mW	15	µΩ/Ω	2	95%	Yes			11
DC resistance standards and sources: low values	Fixed resistor, resistance box: R	Comparison by DCC bridge	1	10	mΩ	R	1 mΩ, 10 mΩ	10	µΩ/Ω	2	95%	Yes			12
						Power	10 mW								
DC resistance standards and sources: low values	Fixed resistor, resistance box	Comparison by DCC bridge	100	100	mΩ	Power	10 mW	5	µΩ/Ω	2	95%	Yes			13
DC resistance standards and sources: low values	Fixed resistor, resistance box	Comparison by DCC bridge	1	1	Ω	Power	10 mW	2	µΩ/Ω	2	95%	Yes			14
DC resistance standards and sources: intermediate values	Fixed resistor, resistance box: R	Comparison by DCC bridge	10	10000	Ω	R	10 Ω, 100 Ω, 1000 Ω, 10000 Ω	5	µΩ/Ω	2	95%	Yes			15
DC resistance standards and sources: intermediate values	Fixed resistor, resistance box	Comparison by Wheatstone bridge	10	1000	kΩ	Power	10 mW	10	µΩ/Ω	2	95%	Yes			16

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DC resistance standards and sources: high values	Fixed resistor, resistance box	Comparison by Wheatstone bridge	1	10	MΩ	Power	10 mW	30	μΩ/Ω	2	95%	Yes			17
DC resistance standards and sources: high values	Fixed resistor, resistance box	Comparison by Wheatstone bridge	10	10	MΩ	Voltage	10 V	10	μΩ/Ω	2	95%	Yes			18
DC resistance standards and sources: high values	Fixed resistor, resistance box	Comparison by Wheatstone bridge	100	100	MΩ	Voltage	10 V	30	μΩ/Ω	2	95%	Yes			19
DC resistance standard and sources: high values	Fixed resistor, resistance box	Comparison by Wheatstone bridge	1	1	GΩ	Voltage	10 V	60	μΩ/Ω	2	95%	Yes			20
DC resistance standards and sources: multiple ranges	Multifunction calibrator	Indirect comparison with standard resistor (4 wire)	1	10	Ω			10	μΩ/Ω	2	95%	Yes			21
DC resistance standards and sources: multiple ranges	Multifunction calibrator	Indirect comparison with standard resistor (4 wire)	0.01	100	kΩ			20	μΩ/Ω	2	95%	Yes			22
DC resistance standards and sources: multiple ranges	Multifunction calibrator	Indirect comparison with standard resistor (2 wire)	0.1	1	MΩ			20	μΩ/Ω	2	95%	Yes			23
DC resistance standards and sources: multiple ranges	Multifunction calibrator	Indirect comparison with standard resistor (2 wire)	1	10	MΩ			30	μΩ/Ω	2	95%	Yes			24
DC resistance meters: low values	Microohmmeter, multimeter, resistance bridge: R	Direct measurement of standard resistor (4/2 wire)	1	100	mΩ	R	1 mΩ, 10 mΩ, 100 mΩ	20	μΩ/Ω	2	95%	Yes			25

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DC resistance meters: intermediate values	Ohmmeter, multimeter, multifunction transfer standard, resistance bridge: R	Direct measurement of standard resistor (4/2 wire)	1	10	Ω	R	1 Ω , 10 Ω	10	$\mu\Omega/\Omega$	2	95%	Yes			26
DC resistance meters: intermediate values	Ohmmeter, multimeter, multifunction transfer standard, resistance bridge: R	Direct measurement of standard resistor (4/2 wire)	0.1	1000	k Ω	R	0.1 k Ω , 1 k Ω , 10 k Ω , 100 k Ω , 1000 k Ω	20	$\mu\Omega/\Omega$	2	95%	Yes			27
DC resistance meters: intermediate values	Ohmmeter, multimeter, multifunction transfer standard, resistance bridge: R	Direct measurement of standard resistor (2 wire)	10	1000	M Ω	R	10 M Ω , 100 M Ω , 1000 M Ω	60	$\mu\Omega/\Omega$	2	95%	Yes			28
DC current sources: low values	Multifunction calibrator, current generator	Direct comparison with multifunction transfer standard	1	200	μA			30	$\mu A/A$	2	95%	Yes			29
DC current sources: intermediate values	Multifunction calibrator, current generator	Direct comparison with multifunction transfer standard	0.2	200	mA			20	$\mu A/A$	2	95%	Yes			30
DC current sources: intermediate values	Multifunction calibrator, current generator	Direct comparison with multifunction transfer standard	0.2	10	A			30	$\mu A/A$	2	95%	Yes			31
DC current meters: low values	Multimeter, multifunction transfer standard	Direct measurement of calibrator's output	1	200	μA			35	$\mu A/A$	2	95%	Yes			32

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DC current meters: intermediate values	Multimeter, multifunction transfer standard	Direct measurement of calibrator's output	0.2	200	mA			25	µA/A	2	95%	Yes			33
DC current meters: intermediate values	Multimeter, multifunction transfer standard	Direct measurement of calibrator's output	0.2	2	A			35	µA/A	2	95%	Yes			34
Capacitance: low loss capacitors	Standard capacitor: C	Comparison by capacitance bridge	0.01	1	pF	C	0.01 pF, 0.1 pF, 1 pF	0.0005	pF	2	95%	No			35
						Frequency	1 kHz								
Capacitance: low loss capacitors	Standard capacitor: C	Comparison by capacitance bridge	10	1000	pF	C	10 pF, 100 pF, 1000 pF	30	µF/F	2	95%	Yes			36
						Frequency	1 kHz								
Capacitance: low loss capacitors	Standard capacitor: C	Comparison by capacitance bridge	10	100	nF	C	10 nF, 100 nF	100	µF/F	2	95%	Yes			37
						Frequency	1 kHz								
Capacitance: dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Comparison by capacitance bridge (3-wire)	0.01	1	pF	Frequency	1 kHz	0.001	pF	2	95%	No			40
Capacitance: dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Comparison by capacitance bridge (3-wire)	1	1000	pF	Frequency	1 kHz	50	µF/F	2	95%	Yes			41
Capacitance: dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Comparison by capacitance bridge (3-wire)	1	100	nF	Frequency	1 kHz	150	µF/F	2	95%	Yes			42
Capacitance: dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Comparison by capacitance bridge (3-wire)	0.1	5	µF	Frequency	1 kHz	350	µF/F	2	95%	Yes			43
Capacitance: dielectric capacitors	Fixed capacitor, variable capacitor, capacitance box	Comparison by capacitance bridge (3-wire)	5	10	µF	Frequency	1 kHz	550	µF/F	2	95%	Yes			44

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Capacitance: meters	Capacitance bridge, LCR meter	Direct measurement of standard or decade capacitor	10	1000	pF	Frequency	1 kHz	2000	µF/F	2	95%	Yes			48
Capacitance: meters	Capacitance bridge, LCR meter	Direct measurement of standard or decade capacitor	1	10000	nF	Frequency	1 kHz	1000	µF/F	2	95%	Yes			49
Inductance: self inductance, low values	Fixed inductor, variable inductor, inductance box	Direct comparison by Maxwell bridge	0.1	1	mH	Frequency	1 kHz	1000 to 300	µH/H	2	95%	Yes			51
Inductance: self inductance, intermediate values	Fixed inductor, variable inductor, inductance box	Direct comparison by Maxwell bridge	10	10	mH	Frequency	1 kHz	100	µH/H	2	95%	Yes			50
Inductance: self inductance, intermediate values	Fixed inductor, variable inductor, inductance box	Direct comparison by Maxwell bridge	0.001	1	H	Frequency	1 kHz	300	µH/H	2	95%	Yes			52
Inductance: self inductance, high values	Fixed inductor, variable inductor, inductance box	Direct comparison by Maxwell bridge	1	10	H	Frequency	1 kHz	2000	µH/H	2	95%	Yes			53
Inductance: meters	RLC meter	Direct measurement of standard inductor	0.1	1000	mH	Frequency	1 kHz	300 to 1000	µH/H	2	95%	Yes			56
AC voltage: AC-DC transfer difference at low voltages	AC-DC transfer standard, thermal converter, micropotentiometer	Comparison by AC DC transfer standard	10	500	mV	Frequency	20 Hz to 1 MHz	10 to 350	µV/V	2	95%	Yes	Matrix 1		57a

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AC voltage: AC-DC transfer difference at medium voltages	AC-DC transfer standard, thermal converter	Direct comparison with thermal converter	0.5	5	V	Frequency	20 Hz to 1 MHz	9 to 70	µV/V	2	95%	Yes	Matrix 1		57c
AC voltage: AC-DC transfer difference at higher voltages	AC-DC transfer standard, thermal converter with range extender	Direct comparison with thermal converter	5	1000	V	Frequency	20 Hz to 1 MHz	10 to 600	µV/V	2	95%	Yes	Matrix 1		57d
AC voltage up to 1000 V: sources	Multifunction calibrator	Comparison by AC DC transfer standard, direct comparison with thermal converter	0.01	1000	V	Frequency	20 Hz to 1 MHz	15 to 600	µV/V	2	95%	Yes	Matrix 2		81a
AC voltage up to 1000 V: meters	AC voltmeter, multimeter, multifunction transfer standard	Direct measurement of calibrator's output	0.01	1000	V	Frequency	20 Hz to 1 MHz	65 to 1900	µV/V	2	95%	Yes	Matrix 3		93
AC current: AC-DC transfer difference	Thermal converter with shunt, AC-DC transfer standard with shunt	Direct comparison with thermal converter plus shunt	2.5	5000	mA	Frequency	40 Hz to 20 kHz	60 to 100	µA/A	2	95%	Yes	Matrix 4		118
AC current up to 100 A: sources	Multifunction calibrator, transconductance amplifier	Comparison with multifunction transfer standard	0.1	10000	mA	Frequency	10 Hz to 30 Hz	150	µA/A	2	95%	Yes			123a
AC current up to 100 A: sources	Multifunction calibrator, transconductance amplifier	Comparison with multifunction transfer standard	0.1	10000	mA	Frequency	30 Hz to 1 kHz	110	µA/A	2	95%	Yes			123b
AC current up to 100 A: sources	Multifunction calibrator, transconductance amplifier	Comparison with multifunction transfer standard	0.1	10000	mA	Frequency	1 kHz to 5 kHz	200	µA/A	2	95%	Yes			123c

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AC current up to 100 A: sources	Multifunction calibrator, transconductance amplifier	Comparison with multifunction transfer standard	0.1	10000	mA	Frequency	5 kHz to 10 kHz	500	µA/A	2	95%	Yes			123d
AC current up to 100 A: meters	AC ammeter, multimeter, multifunction transfer standard	Comparison with thermal converter plus shunt	0.1	2000	mA	Frequency	10 Hz to 10 kHz	200 to 9700	µA/A	2	95%	Yes	Matrix 5		127
AC power and energy: single phase ($f \leq 400$ Hz)	Power meter, power converter, wattmeter	Comparison with reference standard	0.3	30000	W	Voltage	30 V to 300 V	200	µW/V·A	2	95%	Yes			135
						Current	0.01 A to 100 A								
						Power factor	1 to 0.25, inductive or capacitive								
						Frequency	45 Hz to 65 Hz								
AC power and energy: single phase ($f \leq 400$ Hz)	Energy meter	Comparison with reference standard	3	3E+06	Ws	Voltage	30 V to 300 V	200	µWh/V·A·h	2	95%	Yes	Measurand range values valid for typical measurement time of 100 s	135a	
						Current	0.01 A to 100 A								
						Power factor	1 to 0.25, inductive or capacitive								
						Frequency	45 Hz to 65 Hz								
						Measurement time	10 s to 600 s								
AC power and energy: three phase	Power meter, power converter, wattmeter	Comparison with reference standard	0.2	38400	W	Voltage	40 V to 320 V	300	µW/V·A	2	95%	Yes			136
						Current	0.005 A to 120 A								
						Power factor	1 to 0.25, inductive or capacitive								
						Frequency	40 Hz to 70 Hz								

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AC power and energy: three phase	Energy meter	Comparison with reference standard	20	384E+04	Ws	Voltage	40 V to 320 V	300	μWh/VAh	2	95%	Yes		Measurand range values valid for typical measurement time of 100 s	136a
						Current	0.005 A to 120 A								
						Power factor	1 to 0.25, inductive or capacitive								
						Frequency	40 Hz to 70 Hz								
						Measurement time	10 s to 600 s								
AC high voltage: ratio error	Voltage transformer	Direct comparison with reference transformer	0	0.02		Frequency	50 Hz	10E-06		2	95%	No		This CMC is related to the next one	108
						Primary voltage	30 V to 300 V								
						Secondary voltage	100 V								
AC high voltage: ratio: phase displacement	Voltage transformer	Direct comparison with reference transformer	-20	20	mrad	Frequency	50 Hz	15	μrad	2	95%	No		This CMC is related to the previous one	113
						Primary voltage	30 V to 300 V								
						Secondary voltage	100 V								
AC high voltage: ratio error	Voltage transformer	Direct comparison with reference transformer	0	0.02		Frequency	50 Hz	5E-05		2	95%	No		This CMC is related to the next one	109
						Primary voltage	300 V to 750 V								
						Secondary voltage	100 V								
AC high voltage: ratio: phase displacement	Voltage transformer	Direct comparison with reference transformer	-20	20	mrad	Frequency	50 Hz	80	μrad	2	95%	No		This CMC is related to the previous one	114
						Primary voltage	300 V to 750 V								

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Quantity	Instrument or artifact	Instrument Type or Method	Minimum value	Maximum value	units	Parameter	Specifications	Value	Units	Coverage Factor	Level of Confidence	Is the expanded uncertainty a relative one?	Uncertainty matrix	Comments	NMI Service Identifier
						Secondary voltage	100 V								
AC high voltage: ratio error	Voltage transformer	Direct comparison with reference transformer	0	0.02		Frequency	50 Hz	6E-05		2	95%	No		This CMC is related to the next one	110
						Primary voltage	750 V to 3 kV								
						Secondary voltage	100 V								
AC high voltage: ratio: phase displacement	Voltage transformer	Direct comparison with reference transformer	-20	20	mrad	Frequency	50 Hz	90	µrad	2	95%	No		This CMC is related to the previous one	115
						Primary voltage	750 V to 3 kV								
						Secondary voltage	100 V								
AC high voltage: ratio error	Voltage transformer	Direct comparison with reference transformer	0	0.02		Frequency	50 Hz	6E-05		2	95%	No		This CMC is related to the next one	111
						Primary voltage	3 kV to 35 kV								
						Secondary voltage	100/1.73 V								
AC high voltage: ratio: phase displacement	Voltage transformer	Direct comparison with reference transformer	-20	20	mrad	Frequency	50 Hz	90	µrad	2	95%	No		This CMC is related to the previous one	116
						Primary voltage	3 kV to 35 kV								
						Secondary voltage	100 V								
AC high voltage: ratio error	Voltage transformer	Direct comparison with reference transformer	0	0.02		Frequency	50 Hz	17E-05		2	95%	No		This CMC is related to the next one	112
						Primary voltage	35/1.73 kV to 120/1.73 kV								
						Secondary voltage	100/1.73 V								

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AC high voltage: ratio: phase displacement	Voltage transformer	Direct comparison with reference transformer	-20	20	mrad	Frequency	50 Hz	210	µrad	2	95%	No		This CMC is related to the previous one	117
						Primary voltage	35/1.73 kV to 120/1.73 kV								
						Secondary voltage	100/1.73 V								
AC high voltage: meters	AC high voltage meter	Comparison	1	30	kV	Frequency	50 Hz	5	V/kV	2	95%	Yes			137
High AC current: ratio error	Current transformer	Current comparator bridge and standard transformer	0	0.02		Frequency	50 Hz	12E-06		2	95%	No		This CMC is related to the next one	138
						Primary current	0.1 A to 0.5 A								
						Secondary current	5 A								
High AC current: ratio: phase displacement	Current transformer	Current comparator bridge and standard transformer	-20	20	mrad	Frequency	50 Hz	20	µrad	2	95%	No		This CMC is related to the previous one	143
						Primary current	0.1 A to 0.5 A								
						Secondary current	5 A								
High AC current: ratio error	Current transformer	Current comparator bridge	0	0.02		Frequency	50 Hz	5E-06		2	95%	No		This CMC is related to the next one	139
						Primary current	0.5 A to 20 A								
						Secondary current	5 A								
High AC current: ratio: phase displacement	Current transformer	Current comparator bridge	-20	20	mrad	Frequency	50 Hz	5	µrad	2	95%	No		This CMC is related to the previous one	144
						Primary current	0.5 A to 20 A								
						Secondary current	5 A								

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High AC current: ratio error	Current transformer	Current comparator bridge and standard transformer	0	0.02		Frequency	50 Hz	1E-05		2	95%	No		This CMC is related to the next one	140
						Primary current	20 A to 50 A								
						Secondary current	5 A								
High AC current: ratio: phase displacement	Current transformer	Current comparator bridge and standard transformer	-20	20	mrad	Frequency	50 Hz	10	µrad	2	95%	No		This CMC is related to the previous one	145
						Primary current	20 A to 50 A								
						Secondary current	5 A								
High AC current: ratio error	Current transformer	Current comparator bridge and standard transformer	0	0.02		Frequency	50 Hz	15E-06		2	95%	No		This CMC is related to the next one	141
						Primary current	50 A to 500 A								
						Secondary current	5 A								
High AC current: ratio: phase displacement	Current transformer	Current comparator bridge and standard transformer	-20	20	mrad	Frequency	50 Hz	15	µrad	2	95%	No		This CMC is related to the previous one	146
						Primary current	50 A to 500 A								
						Secondary current	5 A								
High AC current: ratio error	Current transformer	Current comparator bridge and standard transformer	0	0.02		Frequency	50 Hz	3E-05		2	95%	No		This CMC is related to the next one	142
						Primary current	0.5 kA to 5 kA								

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						Secondary current	5 A								
High AC current ratio: phase displacement	Current transformer	Current comparator bridge and standard transformer	-20	20	mrad	Frequency	50 Hz	30	µrad	2	95%	No		This CMC is related to the previous one	147
						Primary current	0.5 kA to 5 kA								
						Secondary current	5 A								
RF power: calibrator factor on coaxials	Power sensor (7 mm coaxial, N, PC7)	Comparison	0.9	1		Frequency	0.01 GHz to 6 GHz	0.01 to 0.025		2	95%	No		The minimum and the maximum values are typical	148
						HF power level	1 mW to 10 mW								
RF power: calibrator factor on coaxials	Power sensor (7 mm coaxial, N, PC7)	Comparison	0.9	1		Frequency	6 GHz to 12 GHz	0.015		2	95%	No		The minimum and the maximum values are typical	149
						HF power level	1 mW to 10 mW								
RF power: calibrator factor on coaxials	Power sensor (7 mm coaxial, N, PC7)	Comparison	0.9	1		Frequency	12 GHz to 18 GHz	0.025		2	95%	No		The minimum and the maximum values are typical	150
						HF power level	1 mW to 10 mW								
RF power: calibrator factor on waveguides	Power sensor (waveguide R100 and R140)	Comparison	0.9	1		Frequency	8.2 GHz to 18 GHz	0.01		2	95%	No		The minimum and the maximum values are typical	151
						HF power level	1 mW to 10 mW								
Scalar RF attenuation: on coaxials	Attenuators (coaxial, 50 Ω)	RF comparison with reference standard	0	110	dB	Frequency	1 MHz to 1000 MHz	0.01 to 0.12	dB	2	95%	No	Matrix 6		152b

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Scalar RF attenuation: on coaxials	Attenuators (coaxial, 50 Ω)	RF comparison with reference standard	0	70	dB	Frequency	1 GHz to 18 GHz	0.02 to 0.14	dB	2	95%	No	Matrix 6		154b
Scalar RF attenuation: on waveguides	Attenuators (waveguide IEC R100, R140)	RF comparison with reference standard	0	70	dB	Frequency	8.2 GHz to 18 GHz	0.02 to 0.14	dB	2	95%	No	Matrix 6		156b
RF voltage: RF-DC transfer difference	Thermal voltage converter	Voltage comparison	0.3	4	V	Relative difference	-0.02 to 0.02	2 to 5	mV/V	2	95%	Yes			163
						Frequency	1 MHz to 100 MHz								
RF voltage: RF-DC transfer difference	Thermal voltage converter	Voltage comparison	0.3	4	V	Relative difference	-0.02 to 0.02	10 to 20	mV/V	2	95%	Yes			164
						Frequency	100 MHz to 1000 MHz								
RF voltage: RF voltage meters	Voltmeter	Voltage comparison	0.3	4	V	Frequency	1 MHz to 100 MHz	2 to 5	mV/V	2	95%	Yes			165
RF voltage: RF voltage meters	Voltmeter	Voltage comparison	0.3	4	V	Frequency	100 MHz to 1000 MHz	10 to 20	mV/V	2	95%	Yes			166

Electricity and Magnetism, Hungary, OMH (Országos Mérésügyi Hivatal)**Uncertainty table: Matrix 1**

AC voltage: AC-DC transfer difference at low voltages, OMH Internal Identifier: 57a

AC voltage: AC-DC transfer difference at medium voltages, OMH Internal Identifier: 57c

AC voltage: AC-DC transfer difference at higher voltages, OMH Internal Identifier: 57d

	20 Hz to 40 Hz	40 Hz to 300 Hz	300 Hz to 30 kHz	30 kHz to 50 kHz	50 kHz to 100 kHz	100 kHz to 300 kHz	300 kHz to 500 kHz	500 kHz to 700 kHz	700 kHz to 1 MHz
10 mV to 20 mV	200	150	125	125	125	150	150	300	350
20 mV to 50 mV	175	120	100	100	100	120	120	200	300
50 mV to 100 mV	160	110	85	85	85	110	110	170	270
100 mV to 250 mV	155	100	78	78	78	100	100	160	250
0.25 V to 0.5 V	70	25	10	13	13	16	35	42	55
0.5 V to 3 V	50	10	9	11	11	14	33	40	45
3 V to 10 V	70	15	10	13	13	16	35	42	50
10 V to 20 V	100	30	12	15	15	18	38	45	55
20 V to 50 V	150	70	15	15	15	20	40	-	-
50 V to 200 V	150	100	50	50	100	-	-	-	-
200 V to 500 V	200	200	100	100	200	-	-	-	-
500 V to 1000 V	300	300	200	300	600	-	-	-	-

The expanded uncertainties given in this table are expressed in $\mu\text{V/V}$

Uncertainty table: Matrix 2

AC voltage up to 1000 V: sources, OMH Internal Identifier: 81a

	20 Hz to 40 Hz	40 Hz to 300 Hz	300 Hz to 30 kHz	30 kHz to 50 kHz	50 kHz to 100 kHz	100 kHz to 300 kHz	300 kHz to 500 kHz	500 kHz to 1 MHz
10 mV to 20 mV	200	150	150	150	150	150	150	350
20 mV to 50 mV	175	120	120	120	120	120	120	300
50 mV to 100 mV	160	110	110	110	110	110	110	270
100 mV to 250 mV	155	100	100	100	100	100	100	250
0.25 V to 0.5 V	100	30	20	25	25	25	45	60
0.5 V to 3 V	100	20	15	20	20	22	42	50
3 V to 10 V	100	30	20	25	25	25	45	55
10 V to 20 V	100	45	25	25	25	25	48	60
20 V to 200 V	100	100	100	100	100	-	-	-
200 V to 1000 V	-	300	200	300	600	-	-	-

The expanded uncertainties given in this table are expressed in $\mu\text{V/V}$

Uncertainty table: Matrix 3

AC voltage up to 1000 V: meters, OMH Internal Identifier: 93

	20 Hz to 40 Hz	40 Hz to 45 Hz	45 Hz to 300 Hz	300 Hz to 1 kHz	1 kHz to 20 kHz	20 kHz to 30 kHz	30 kHz to 50 kHz	50 kHz to 100 kHz	100 kHz to 300 kHz	300 kHz to 500 kHz	500 kHz to 1 MHz
10 mV to 20 mV	400	400	400	400	400	500	500	1000	1000	1000	1900
20 mV to 50 mV	300	300	300	300	300	400	400	900	900	900	1700
50 mV to 100 mV	240	240	240	240	240	340	340	800	800	800	1600
100 mV to 250 mV	220	220	220	220	220	320	320	770	770	770	1500
0.25 V to 0.5 V	140	80	70	65	65	65	80	80	125	400	600
0.5 V to 3 V	125	75	65	65	65	65	75	75	120	400	600
3 V to 10 V	125	80	70	65	65	65	80	80	120	400	600
10 V to 20 V	125	80	70	70	70	70	80	80	125	400	600
20 V to 200 V	-	200	200	200	200	200	200	200	-	-	-
200 V to 750 V	-	-	500	300	500	500	1000	1000	-	-	-
750 V to 1000 V	-	-	500	300	500	500	-	-	-	-	-

The expanded uncertainties given in this table are expressed in $\mu\text{V/V}$

Uncertainty table: Matrix 4

AC current: AC-DC transfer difference, OMH Internal Identifier: 118

	40 Hz to 10 kHz	10 kHz to 20 kHz
2.5 mA to 50 mA	60	60
50 mA to 1 A	60	100
1 A to 5 A	75	100

The expanded uncertainties given in this table are expressed in $\mu\text{A}/\text{A}$

Uncertainty table: Matrix 5

AC current up to 100 A: meters, OMH Internal Identifier: 127

	10 Hz to 20 Hz	20 Hz to 40 Hz	40 Hz to 1 kHz	1 kHz to 5 kHz	5 kHz to 10 kHz
0.1 mA to 0.2 mA	1200	800	600	4700	9700
0.2 mA to 0.5 mA	950	600	400	2700	5700
0.5 mA to 2 mA	830	480	280	1500	3300
2 mA to 20 mA	770	420	220	900	2100
20 mA to 200 mA	750	400	200	700	1800
200 mA to 300 mA	-	880	880	1200	9300
300 mA to 500 mA	-	820	820	1100	9000
500 mA to 2 A	-	770	770	950	8800

The expanded uncertainties given in this table are expressed in $\mu\text{A/A}$

Uncertainty table: Matrix 6

Scalar RF attenuation: on coaxials, OMH Internal Identifier: 152b

Scalar RF attenuation: on coaxials, OMH Internal Identifier: 154b

Scalar RF attenuation: on waveguides, OMH Internal Identifier: 156b

	1 MHz to 1 GHz	1 GHz to 18 GHz
0 dB to 10 dB	0.01	0.02
20 dB	0.03	0.04
30 dB	0.04	0.06
40 dB	0.05	0.08
50 dB	0.06	0.1
60 dB	0.07	0.12
70 dB	0.08	0.14
80 dB	0.09	-
90 dB	0.1	-
100 dB	0.11	-
110 dB	0.12	-

The mismatch error is included if the reflection of the attenuator is under 0.02

The expanded uncertainties given in this table are expressed in dB